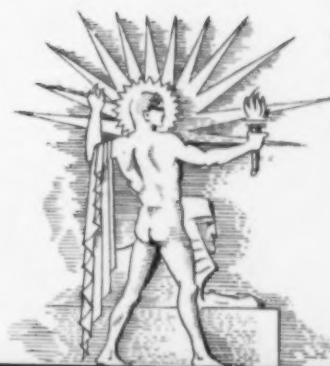
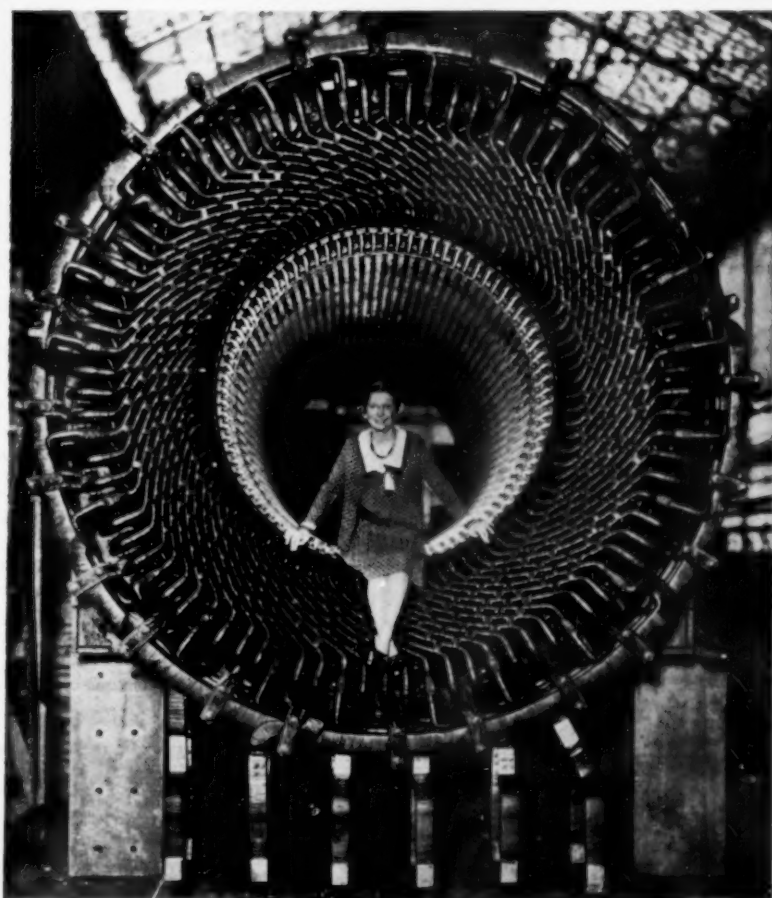


JUN 7 1932

# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE.



JUNE 4, 1932

Frame For Power and Beauty

See Page 357

A SCIENCE SERVICE PUBLICATION

## SCIENCE NEWS LETTER

VOL. XXI

No. 582

The Weekly  
Summary of  Current  
Science

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## ? DO YOU KNOW THAT ?

Seedlings of the Big Trees, the giant Sequoias, are raised in a nursery in the Sequoia National Park, in California.

Sir Hubert Wilkins, British explorer, has designed a new submarine without propellers and rudders for cruising under the Arctic ice.

The evergreen forest of Siberia is the largest single mass of conifers in the world.

A new 3-story bus, made of lightweight metal and carrying 88 passengers, has been put into service in Italy.

Artificial ice came into use industrially about 1880.

A German scientist states that loss of 40 to 50 hairs from the head in a day is the "normal" limit.

Most woodpeckers bore round holes in trees, but the pileated woodpeckers dig both round and square holes.

Pelicans have no song and the adults no call-notes, while the young call for food with a low grunt, rising at times to a shrill scream.

Archaeologists exploring in Mesopotamia have discovered a tablet 4,000 years old inscribed with 50 missing lines of the famous story of Gilgamesh.

The pygmy owl of the Rocky Mountains region is not much larger than an English sparrow.

It is estimated that the world's population today is a little more than double the population of 100 years ago.

People in the United States spend \$15,000,000 a year on fraudulent cures, the Committee on the Cost of Medical Care reports.

Eggs are better than a spring tonic, in view of the iron, vitamins, and protein they contain, is the advice of the U. S. Bureau of Home Economics.

## WITH THE SCIENCES THIS WEEK

**CURIOSITY-AROUSING** questions are prepared concerning the most interesting and important news in each issue. These questions should be a mental stimulant for the adult reader and a boon to the teacher who uses the Science News Letter to add zest to her classroom instruction.

Book reference in italic type is not the source of information of the article, but a reference for further reading on the subject of the article. Books cited can be supplied by Librarian, Science Service, at publisher's price, prepaid in U. S.

## ANTHROPOLOGY

Do all white infants have blue eyes? p. 361  
*The Child's Heredity—Paul Popenoe—Williams & Wilkins, 1929, \$2.*

## ARCHAEOLOGY

Why is it impossible to give the original location of the stone tablet bearing the Uzziah inscription? p. 362

## ASTRONOMY

What is the celestial equator? p. 357  
What is the first star which was found to be double? p. 354. *Field Book of the Skies—W. T. Olcott and E. W. Putnam—Putnam, 1929, \$3.50.*

## AVIATION

Why are engineers installing auxiliary wings on airplanes? p. 353. *The Airplane—Frederick Bedell and T. E. Thompson—Van Nostrand, 1930, \$3.75.*

## BOTANY

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Spruce and fir forests indicate what sort of climate? p. 357. *Forests and Mankind—C. L. Pack and Tom Gill—MacMillan, 1929, \$3.*

## ENGINEERING

What is the speed of the energized rotor inside the generator pictured on the cover of this week's SCIENCE NEWS LETTER? p. 357

Why has New Orleans always had to pump itself out from under rain water? p. 359

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What extracts were used in a unique attack on the Japanese beetle? p. 357

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Where does radium on the ocean bottom come from? p. 352

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How has the diet of Mexicans been described? p. 356

## PHYSICS

How may Einstein's latest achievement be said to give law unto the behavior of the infinitesimal? p. 351

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Two families have broken what rule in the "taste blind" test? p. 356

## PSYCHIATRY

Before their mental breakdown, what were the characteristics of the nine patients studied by a Rhode Island psychiatrist? p. 360

When the right half of the brain is dominant, what physical characteristic is an individual apt to possess? p. 363

## PSYCHOLOGY

How is a teacher likely to know that the parents of her pupils do not live happily together? p. 352

## PHYSICS

# Einstein Extends Theory to Electron and Proton Interior

Realm of the Minutely Small Heretofore Not Reached by Physical Laws Is Covered in Pronouncement

PROF. ALBERT EINSTEIN has extended his unification of the laws of gravitation and electricity to the interior of the electrons and protons, a realm for which he has been unable heretofore to find a law.

A promising addition to his previous unified field theories of 1929 and 1931 is made in this latest formulation of physical theory by the great German physicist. The details of the new theory are contained in a communication by Prof. Einstein and his associate, Dr. W. Mayer, to the Prussian Academy of Science and published in its proceedings under the title: "Unified Field Theory of Gravitation and Electricity."

Without a law for the behavior of the electromagnetic field in the interior of the electrons and protons, Prof. Einstein had previously found it necessary, as Maxwell had before him, to treat the electrons and protons as foreign bodies embedded in the electromagnetic field, influencing it but not of it. He now assumes a somewhat more general structure of his four-dimensional space-time continuum as expressed in the axiom governing the five component vectors in terms of which he describes this structure. By this means the father of relativity is now able to set up a series of equations capable of treating the electrons and protons as integral parts of the electromagnetic-gravitational field.

## 16 Equations Required

The detailed application of these equations to special problems has not yet been carried out. The complexity of this new unified field theory may be seen from the fact that Prof. Einstein requires for its description twenty different functions of the coordinates which in a four-dimensional space requires sixteen independent differential equations for their full description. Actually in the form in which the equations are now written twenty-five differential equations appear. Prof. Einstein is, however, able to prove that nine of these can be deduced from the other sixteen, so that the resulting equations are not

inconsistent, but, as the mathematicians say, compatible with each other.

In the ordinary electromagnetic equations of Maxwell there is a system of twelve field equations plus special assumptions governing the behavior of electrons and protons. The ordinary Newtonian equations of gravitation consist of three field equations plus the special assumption that action and reaction are equal. It is not surprising therefore that in a unified theory which covers both of these systems of equations in their most general form, Prof. Einstein should require sixteen equations.

## New Light on Electrical Corpuscles

In modern theory of physics, the electron and the proton have been much in the position of the deus ex machina of the old Greek dramas, introduced in the language of the mathematicians as a "singularity" in the field. The nature of the singularity and the laws of the disturbance that it causes in the field is independent of the laws of the field itself, and they are added as a special assumption. It is too early to state whether this new synthesis of Einstein's will banish the deus ex machina from physical theories as thoroughly as it has been banished from the modern stage.

The new theory may give a new approach to the understanding of the interior of the electrical corpuscles, the protons and the electrons. As yet it has

nothing to do with atomic structure, as an atom is a conglomeration of electrons and protons.

In modern conceptions of physics the space between the protons and the electrons in the atomic nucleus is subject to the same laws as the space outside the nucleus. All of these laws, both inside and outside the nucleus, are now formulated in terms of quantum mechanics. Prof. Einstein has expressed the expectation that all of the assured results of the quantum theory would be found in his unified field theory.

*Science News Letter, June 4, 1932*

## GENETICS

## Japanese Triplets So Much Alike Scientists Dispute

LITTLE Japanese triplets that are so much alike that sometimes even their father gets them mixed up, have been the subject of a scientific study made by Taku Komai and Goro Fukuoko of Kyoto Imperial University.

The features, skin and hair color and bodily measurements of the little girls are all very similar, so a report to the *Journal of Heredity* states. Even their finger, palm, and sole prints are so much alike that the difference is greater between the right and left side of one individual than between the right or left sides of the different children. Mental tests also show them to be very similar in this respect.

Yet despite all this evidence that they are identical, that is, that they all had their origin in the same ovum with the same heredity, the circumstances of the birth appear to indicate that one came from a separate ovum and is merely a sister who chanced to be born at the same time. Thus they provide a new ground for conflict between embryology and genetics.

*Science News Letter, June 4, 1932*



CAUSE OF SCIENTIFIC CONFLICT



## PSYCHOLOGY

# Children From Happy Homes Have Less Trouble in School

**Swearing and Raging, Imitation, Disgust, Irritability And Quarreling Reflect Marital Difficulties**

**M**ARITAL difficulties in the home have a bad effect on the emotional stability of the child and his behavior both in and out of school, Dr. Ira S. Wile, psychiatrist of New York told an audience at the New School of Social Research.

Children coming from homes with a minimum of marital friction are the most stable emotionally, he said. "As the whole child goes to school, his behavior naturally reflects to some extent the home and the parents, their training and guidance as well as the emotional balance in the home that makes for familial equilibrium."

Children's behavior in school is not, however, a reliable index to the amount of family disturbance, Dr. Wile stated.

"Even the rising divorce rate is not a reliable index of marital difficulties that affect children, because divorces are most common when no children exist," he said.

"Parental disharmony constitutes an important factor in juvenile misbehaviors to the extent of perhaps 10 to 15 per cent. if one may judge by the experience of Child Guidance Clinics. One may properly ask, however, whether perhaps an equal amount of disharmony does not exist in homes from which no children are brought to the clinics."

Dr. Wile described several ways in which marital difficulties may affect the behavior of children in school.

The child is imitative; he may swear and rage as one of his parents does.

He may show effects of the general situation by attitudes of disgust, weepiness, irritability, reverie and hysteria.

He may participate in the quarrel by taking sides with one parent and offering a form of progressive disobedience with defiance, loud and vociferous language.

Or he may capitalize the parental disharmony by playing one parent against the other for his own benefit, and may carry this behavior over into the classroom.

"Personal maladjustment following marital disharmony as noted in school may be marked by hyperactivity, inferi-

ority, fearfulness, reverie, mental conflict, emotional instability, sensitivity, self-consciousness, seclusiveness. The direct behavior symptoms which may disturb the school vary from inattention, easy distractibility, irregularity in various branches, school failure with retardation, to disobedience, tantrums, exhibitionism, fighting, bullying, the use of obscene language and swearing, and at times may be evident as chronic lying and stealing, and even truancy itself."

*Science News Letter, June 4, 1932*

## GEOPHYSICS

## Ocean Sediments Have High Radium Content

**R**ADIUM is more abundant in the sediments of the deep ocean bottom than it is in land rocks. The deep sediments have more than four times as great radium content as the granitic rocks on land, and more than ten times as much as land basalts. The deeper the sediments, and the farther they are from shore, the greater their radioactivity.

These are among the facts laid before the American Geophysical Union by Dr. Charles S. Piggot of the Carnegie Institution of Washington.

## PHYSIOLOGY

# New Evidence to Show That Nerves Secrete Hormones

**N**ERVES achieve their effects by means of special hormones which they produce, instead of by direct action on muscles and glands.

This is the latest theory of physiologists. Further evidence in support of it was presented by Dr. B. P. Babkin and his associates, Drs. Armine Alley and George W. Stavsky, of McGill University, to the Royal Society of Canada.

These investigators found that, under certain conditions, stimulating the nerve

The samples of ocean-bottom sediments analyzed for radioactive elements are not at all numerous as compared with the land rock and earth samples similarly examined, Dr. Piggot says; but in so far as any generalizations can be made, the facts are as he stated.

This accumulation of more highly radioactive deposits in the deepest and most remote places in the ocean may be having an appreciable effect on the course of the earth's geological history, he said. For one thing, such deposits can well act as blankets to slow down the escape of the internal heat-energy of the earth.

A number of theories of probable sources of these radioactive deposits were examined and discarded by Dr. Piggot. He does not believe that they have been concentrated by living organisms and deposited by the down-sifting of their skeletons after they have died. While some organic sediments have high radium contents, he said, on the average the non-organic red clay sediments are three times as radioactive. Neither is the theory of submarine volcanism, with intense chemical action where water and hot magma are in contact, any more tenable, he thinks. Such action would be more or less "spotty" in its effects, whereas radioactive sediments are found everywhere.

Recognizing that much research yet remains to be done on the question, Dr. Piggot inclines to the belief that the origin of the radioactive content ocean-bottom sediments is to be sought directly in the rocks of the earth's crust. These are worn or broken down into the fine particles that eventually settle on the bottom of the sea.

*Science News Letter, June 4, 1932*

of the salivary gland on one side of the mouth produced increased activity and secretion by the salivary gland on the other side. Under the conditions of their experiment, there could be no direct nervous connection between the two glands. This strongly indicates that the nerve itself produces a hormone which acts on the secretory cells of the corresponding gland and reaches the opposite gland by the blood stream.

*Science News Letter, June 4, 1932*



AVIATION

## Airplanes Grow New Wings To Increase Lifting Power

**A**LTHOUGH the airplane is beyond the fledgling stage of its existence, there are being grown new wings for it in the Langley Memorial Aeronautical Laboratory at Langley Field, Va. From the standpoint of aerodynamics the wing is the most important consideration of the design of an airplane. In the world's largest wind tunnel and in a number of other wind tunnels the members of the staff of the National Advisory Committee for Aeronautics have investigated new and promising shapes of airplane wings, some full-size and some as models in the smaller wind tunnels. Then the most efficient types are constructed and placed on actual airplanes and tested in flight.

The modern airplane has been made possible as the result of the development of improved wing forms, more efficient and lighter engines and propellers, and improved control devices giving better control at or near the stalling speed. The present tendency in the design of airplanes is in answer to the demand for increasing maximum speed without increasing the landing speed of the airplane. The problem has been one of finding a shape and proportion of airfoil or wing that will produce the greatest lift with the least drag or resistance. In such improvement of wings or modifications of wings it is necessary to provide for sufficient lift and control at low speeds to make easy and safe landings.

Aircraft engineers who recently attended the N. A. C. A. conference at Langley Field were shown two prom-

ising wings which have application both to military and to commercial airplanes, especially of the type used by the private flyer. One type of wing investigated by the committee was designed by Harlan D. Fowler, Pacific Coast aeronautical engineer. The Fowler variable area wing consists of a normal wing with a small wing set in the trailing edge. The small wing moves down and to the rear of the main wing, increasing the area of the main wing and also acting as a slotted flange. Tests on a model of this wing show that it has two and one-half times the lift of the ordinary wing of conventional form. With this wing, when the pilot is about to land he swings the auxiliary airfoil or flap downward and to the rear of the trailing edge, in which position it gives the highest lift and permits a much lower landing speed. When the flap or auxiliary wing is in its high-lift position a slot is left between the main wing and the flap which accelerates the smooth flow of air over the top of the flap.

A simpler type of wing on which tests have been completed by the N. A. C. A. is one having a small auxiliary airfoil placed above and in front of the main wing. The combination of a small auxiliary wing with the conventional wing, illustrated on this page, increased the lift about 53 per cent. A small auxiliary wing has been added to a small commercial type airplane and on this particular airplane it decreased the landing speed from 49 to 39 miles per hour at a sacrifice of 2.5 miles per hour top speed. This new wing permits the air-

plane to glide at a much steeper angle without loss of control, which means that it can land over an obstruction in a much smaller space.

*Science News Letter, June 4, 1932*

### CHEMISTRY

## Gassing Flour Does Work For Digestive Organs

**T**HE dough of wheat flour that puffs and blows up energetically as it rises saves the digestive organs work. For the more a dough gasses, the more readily it converts its starch into sugar easily assimilated by the human body. Digestive organs convert all starch into sugar before it can be used as a building material.

The relation between a flour's "gassing power" and its "diastatic activity," or ability to change starch into sugar, was discussed by M. J. Blish and R. M. Sandstedt of the University of Nebraska before the meeting of the American Association of Cereal Chemists.

"The terms 'gassing power' and 'diastatic activity' are frequently used interchangeably, although they are not strictly synonymous," they said. "Differences among flours in gassing power reflect variations not only in diastatic activity, but also in original sugar content."

*Science News Letter, June 4, 1932*

### ASTRONOMY

## Largest Spot of Year Appears on Face of Sun

**A**SUNSPOT so large that it would engulf the earth is now on the face of the sun. It is a single spot with a total diameter of 22,000 miles, of which 9,000 miles is the darker interior portion or umbra. Two earths of the size of ours, 8,000 miles across, could easily be placed within this disturbance in the atmosphere of the sun.

Observations made at the U. S. Naval Observatory in Washington by C. B. Watts, astronomer in charge of solar studies, show that the spot is just beyond the center line of the sun and four degrees north of the solar equator. It is roughly circular and is the largest single spot to appear on the sun this year. Keen eyes viewing the sun through heavily smoked glass were able to detect the spot.

A sunspot minimum is approaching and the sun has been relatively unspotted.

*Science News Letter, June 4, 1932*

ASTRONOMY

# Summer Constellations Fill the Sky

## Changing Appearance of Heavens Tells Student of Stars That Year's Longest Day and New Season Are at Hand

By JAMES STOKLEY

WITH the disappearance from the evening sky of Orion, the heavenly warrior; the two dogs, Canis Major and Canis Minor; Taurus, the bull, and most of Auriga, the charioteer; and Gemini, the twins—groups that were so conspicuous in the southern winter sky and that remained in the west as spring began—the student of the stars now knows that summer is soon to begin, even should he forget to look at his calendar. To take the place of these rather spectacular constellations, we now have shining in the east such groups as Scorpius, the scorpion; Aquila, the eagle; Cygnus, the swan; Lyra, the lyre; Hercules, and Ophiuchus, who carries Serpens, the serpent.

These figures, to which the ancients gave such fanciful names, are shown on the accompanying maps. Now, with warm weather beginning, one is apt to be out of doors in the evening, and this is a good time to make the acquaintance of the constellations. Perhaps the western sky is as good a place as any to start. However, the brightest body that you see there is not a star at all, but the planet Jupiter. This big brother of the earth, largest of the planets that accompany us around the sun, can be seen above the horizon for a couple of hours after sunset. But above it is a group of real stars, forming the familiar "sickle." As seen now in the evening, this agricultural implement hangs with the point of the blade downwards, and the handle pointing to the southwest.

"Sickle" is really an unofficial name. Just as the "great dipper," for instance, is actually part of Ursa Major, the great bear, so is the "sickle" part of the constellation of Leo, the lion. Of course, it does look more like a sickle than it does a lion, but evidently the ancients who invented the name did not think so. The blade of the sickle, in their imagination, formed the lion's head, and the handle his forefeet. The triangular group of stars above the sickle formed the beast's hind quarters. Regulus, the star at the end of the handle of the sickle, is the

brightest in the constellation. Its name means "the royal star," and possibly there is some connection between this name and the lion as the "king of beasts." The second brightest star in the group, the one at the top of the triangle, is called Denebola.

To the right of Leo is the great bear, Ursa Major, with the "great dipper," without doubt the best known star group. The "pointers," the two stars now at the lower end of the bowl of the dipper, indicate the line to Polaris, the pole star.

### Proper Names for All

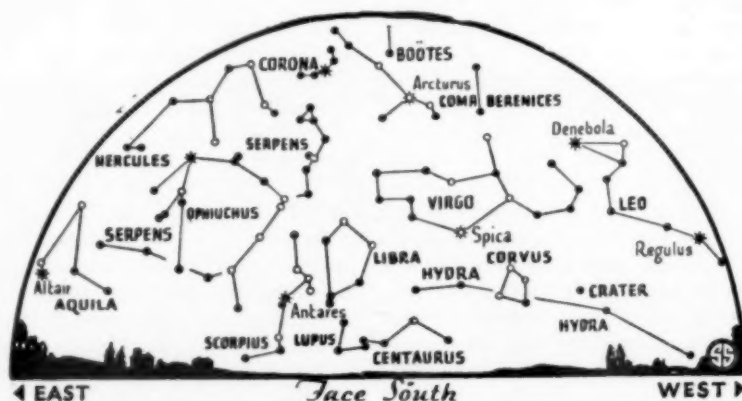
Though not first magnitude, the stars that form the great dipper have all been given proper names, so famous are they. The two pointers are called Dubhe and Merak, the former being nearer the pole, that is, to the right as we see it this evening. Following around the dipper, to the handle, we then have Phaed, Megrez, Alioth, Mizar and Alcaid. Many stars have other names by which they are often known, and Alcaid is frequently referred to as Benetnasch.

Mizar, which is the star at the bend of the handle of the dipper, has another claim to fame, for it is accompanied by a fainter star called Alcor. To a person whose eyesight is fairly good, Alcor is easily visible, to the east of Mizar as the constellation is now situated. Al-

cor is just about the fifth magnitude, a full magnitude brighter than the faintest star that can be seen by the naked eye under the best conditions. With very slight optical aid such as that afforded by a pair of opera glasses, it stands out plainly. With a small telescope, say one having a lens two inches in diameter and magnifying perhaps 50 diameters, it is conspicuous, and then another interesting feature can be seen. Mizar itself is not a single body, but one of a class of bodies called "double stars." The distance of Alcor from Mizar is nearly twelve minutes of arc—a little more than a third the diameter of the moon. The two components of Mizar are approximately a fiftieth as far apart, or about 14 seconds.

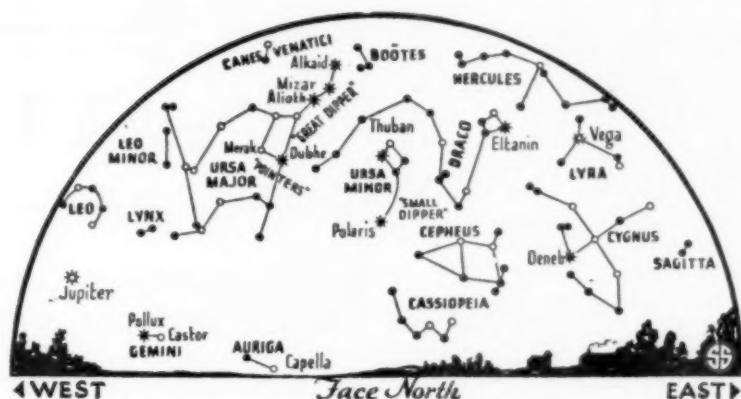
Out of every hundred stars in the sky, about a half a dozen are now known to be double, thanks to the researches of many astronomers, with some of the world's largest telescopes. But before the year 1650, none were known. In that year the Italian Jesuit priest, Giovanni Battista Riccioli, turned his telescope on Mizar, and, to his surprise found that it consisted of two bodies, in addition to Alcor, which his telescope showed clearly a short distance away.

Father Riccioli is also famous as having introduced the modern system of names for objects on the moon. It was he who started the practice of naming them after famous astronomers, and, of course, followed his own prejudices. Thus it is that the great Galileo, who but a few years earlier had lost his con-



*Hercules, Serpens, Ophiuchus, Aquila, and Scorpius bring a different appearance to the southern sky as summer comes.*





### FIRST DOUBLE STAR

*Mizar, in the handle of the "Great Dipper", is the first star found to be double. Giovanni Battista Riccioli noticed this in 1650. Since that time it has been discovered that out of every 100 stars, about six are double.*

trovery with the Church, is commemorated with but a small crater, while others, whose names today are practically forgotten in any other connection, are recalled by some of the greatest lunar features.

### Mizar Doubly Double

An American astronomer, the late Prof. Edward Charles Pickering, famous director for many years of the Harvard College Observatory, made the next great contribution to knowledge of Mizar. This was in 1889, when he studied spectrum photographs of this interesting star. These showed that the brighter of the two components is itself double, but so close are the members of the pair that no telescope will show them to the eye as two separate bodies. Only with the aid of the spectroscopic are they revealed, and thus it is called a "spectroscopic binary."

Turning now to the other constellations, we pass to the left of Leo, and there can be seen Virgo, the virgin, with the brilliant Spica as her brightest star. Above Virgo is Boötes, the herdsman, with the first magnitude Arcturus, which shines high in the south. Arcturus is one of the brightest stars seen from the latitude of most of the United States. It is exceeded only by Sirius, the dog star, while it is tied for second place by two other stars of practically the same brightness. These are Capella and Vega. The former is in the constellation of Auriga, the charioteer, which was conspicuous a few months ago, but is now almost hidden behind the northwestern horizon. If the sky is clear in that direction, Capella can be seen, very low. Vega, however, is high in the east, bluish in color. Arcturus, being

rather reddish, is hard to compare with Vega without scientific apparatus. But for a really red star, look to the southeast. Near the horizon in that direction is Scorpius, the scorpion, with Antares to mark it. In fact, the name Antares means "the rival of Mars," an allusion to its ruddy color and to the similar hue of that planet, which is not in the evening sky at present.

Two other brilliant stars are seen in the east. Just below Vega is a row of stars now almost parallel to the horizon. At their left end is a bright star called Deneb. This group is Cygnus, the swan, sometimes called the "Northern Cross." Deneb marks the tail of the bird, and the row of stars has long outstretched neck. The arms of the cross

are his wings. A little lower to the right, almost due east, is another bright star, Altair, marking Aquila, the eagle.

### Shortest Nights, Longest Days

Though in one respect June is a good month to see the stars, because of the frequent warm evenings, it also brings the shortest nights, and, conversely, the longest days. On June 21 comes the longest day of the year. This is the summer solstice, when the sun reaches its farthest north position in its annual trip among the stars. Then it is directly over the earth's tropic of Cancer. It is at this position at 10:23 a. m., eastern standard time, and by convention, this marks the beginning of summer. On this day the sun rises, over middle latitudes in the United States, or 40 degrees, at 4:31 a. m., local standard time, and sets at 7:32 p. m., local standard time. This means that there are just about 15 hours of sunlight. Morning and evening twilight extend the day still longer, so at this time of year the astronomer's working time is reduced to the union schedule of eight hours!

If you want to take advantage of the moon's light on these June evenings, you may do so from about the eighth to the twentieth. The moon is new on the fourth. On the eleventh it is at first quarter, which means that it is directly south at sunset, and visible until midnight. Full moon comes on the eighteenth. Then it is above the horizon the entire night. On the twenty-fifth it is at last quarter and rises at midnight.

*Science News Letter, June 4, 1932*

### CHEMISTRY

## Standard Sponge Cake Is Measuring Unit For Others

**S**PONGE CAKE has been turned into a yard stick.

Though this transformation has not been made literally, a standard cake by which other cakes are to be measured through comparison was described before the meeting of the American Association of Cereal Chemists.

The formula and method for making this standard test cake were given by Washington Platt and Philip D. Kratz of the Borden Research Laboratories at Syracuse, N. Y. When the cakes are baked, Mr. Platt and Mr. Kratz said,

there remains the problem of recording their characteristics and of expressing them quantitatively.

They told how to measure the specific gravity of the batter, and the volume, softness and toughness of the finished cake. Methods were also given for recording shape, grain and color and for scoring the flavor. Tests on keeping quality were also described. As a result of these determinations it is now possible to accurately describe a cake in terms of its properties, the chemists pointed out.

*Science News Letter, June 4, 1932*

## SOCIOLOGY

**Defective Children Not Naughtier Than Others**

THE POPULAR impression that children with defective minds are more inclined to naughtiness and behavior problems is false, Clara Burrow, head teacher of the State Street Binet School, Newark, N. J., reported to the American Association for the Study of the Feeble-minded.

"There are bad people with low mentality, and good people with low mentality," she said.

If the teacher in a special school for defective children faces more behavior problems than her colleagues in the general school, it is because of the faulty training her charges have received before being placed in the special school. Placing such handicapped children in classes with those of superior minds is harmful, she told the meeting. But early recognition and special training will prevent later delinquency.

"They have faced failure, ridicule, and reprimands so often that they have become sullen, indifferent, or aggressive in an attempt to counteract the boredom and inferiority that they feel," she said. "If a child's mental limitations are recognized early, and he is placed with his peers, and with teachers who can give him sympathetic understanding and guidance, his problem of mental deficiency becomes somewhat less serious. There are jobs requiring only a minimum of intelligence. Streets must be swept, floors must be scrubbed, dishes must be washed. There are factory operations that these boys and girls can do, provided they have been trained in certain desirable habits, simple skills, and attitudes. This the special school aims to do."

*Science News Letter, June 4, 1932*

## PHYSIOLOGY

**Indians Less "Taste-Blind" Than Paleface Neighbors**

INDIANS are less "taste-blind" than their paleface neighbors. This has been discovered by tests conducted on Indians attending the Haskell Institute at Lawrence, Kansas, by Philip Levine and Arthur S. Anderson.

The two investigators used phenylthio-carbamide, the substance which Dr. A. L. Fox, chemist at the Du Pont laboratories in Wilmington, Del., discovered to be exceedingly bitter to about two-thirds of all persons tested,

and quite tasteless to the rest. The great majority of persons tested by Dr. Fox and other investigators have been Caucasians. When Mr. Levine and Mr. Anderson tried it on the Indians they found only about six per cent. out of a group of 183 could not taste it. Among Indians with some white blood in their veins the proportion of non-tasters was considerably higher; 10.4 per cent.

The two investigators also found, among their tests of the white population of Lawrence, two families that seem to break the rule which was thought to have been established: that if both parents are non-tasters, all of their children will be "taste-blind" also. One of these "taste-blind" couples had six children, all but one of whom found the substance bitter. One of the parents could get a little taste out of it, though he called it "a little sour" instead of bitter. In the other family, the father could detect a very slight bitter taste; the mother none at all. Four of their six children were non-tasters, but the other two found the test substance bitter.

*Science News Letter, June 4, 1932*

## PSYCHIATRY

**Four Per Cent. of Primary Children Mentally Deficient**

AS MANY as four per cent. of primary school children are mentally deficient, and some careful surveys report as high as eight or even ten per cent. so subnormal as to require education outside the regular classrooms of the public schools, Dr. Edgar A. Doll, director of research of the Training School at Vineland, N. J., told the meeting of the American Association for the Study of the Feeble-minded.

Of these, fewer than ten per cent. are cared for in institutions—nine out of ten of the feeble-minded children are at large in the community.

"We know today that a person must be something more than feeble-minded to require institutional care," Dr. Doll said. "He must be feeble-minded and helpless, or feeble-minded and dependent, or feeble-minded and anti-social, and so on."

Most feeble-minded children live in their homes and are probably going to public schools, and since very few children are cared for in special classes, about 80 per cent. of the feeble-minded of school age are found in the regular classes. The real problem of their training, is, therefore, a community and a public school problem, Dr. Doll pointed out.

*Science News Letter, June 4, 1932*

# IN SCIENCE

## MEDICINE

**Spicy Diet Probably Not Cause of Stomach Cancer**

A SPICY, highly seasoned diet probably does not influence the development of cancer of the stomach, although statements to that effect have frequently been made, Drs. Warren G. Harding, 2d and Franklyn D. Hankins of the Los Angeles County General Hospital conclude in a report published in the *American Journal of Cancer*.

These investigators made post-mortem observations of 158 patients who died of cancer of the stomach, paying particular attention to Mexican patients. If spices and condiments were a significant factor in the development of stomach cancer, the condition should occur rather frequently in Mexicans, the physicians argued, because the diet of these people has been fittingly described as "a little food mixed with pepper and spices." But they found that in Mexicans cancer did not occur any oftener in the stomach than elsewhere in the body.

*Science News Letter, June 4, 1932*

## BOTANY

**No Fool-Proof Rule to Detect Poisonous Mushrooms**

THE PUBLIC'S desire for a fool-proof rule by which to distinguish an edible mushroom from a poisonous one is doomed to unfulfillment, says Dr. Fred J. Seaver, curator of the New York Botanical Garden.

"There is no such rule," he stated. "One must learn to know the mushrooms and to distinguish them as you would your friends from your enemies."

Dr. Seaver said that to the mycologist, or student of fungi, there was no significance in terms "toadstool" and "mushroom."

"A mushroom is an edible toadstool or a toadstool is a poisonous mushroom, whichever way one may wish to put it."

With the aid of colored lantern slides, Dr. Seaver gives amateurs an introduction to the fungi, the group of plants to which mushrooms belong.

*Science News Letter, June 4, 1932*



# ENCE FIELDS

## ENTOMOLOGY

### Japanese Beetle Withstands Scientist's Unique Attack

**A** CAMPAIGN along new lines has been conducted against the destructive Japanese beetle by government entomologists in Washington but first results published indicate that the insect is the victor.

Hoping to find a way to put an end to the ravages of the beetle, the entomologists prepared extracts from plants which were known to be immune to the beetle's attack. These, they hoped, would have a repellent effect on the insect when applied to such trees as apple and peach and would prevent it from skeletonizing the leaves and gouging out the fruit. A repellent for use on corn was also hoped for.

During the three years in which the campaign was conducted, 474 extracts, representing 390 plant species, were tested. Of these only 56 showed any indication of repellency. Twenty-two extracts, made from such plants as holly, goldenrod, and mayapple, were found to have a repellent effect on small peach and apple trees, and were the only ones regarded by the entomologists as justifying further study.

In view of the fact that extracts have been made from the more abundant and important immune plants, the entomologists expressed doubt that a continuation of the campaign would result in the discovery of a practical repellent for the Japanese beetle.

*Science News Letter, June 4, 1932*

## PHYSIOLOGY

### Bananas Prescribed for Childhood Disorder

**B**ANANAS, once denied a place in the child's diet because they were "too hard to digest," now not only have won a place in the normal child's diet but are being especially prescribed in the treatment of a digestive disorder of children, it appears from a report of Dr. Sidney V. Haas of New York to the American Medical Association.

Dr. Haas recommended bananas as an essential in the diet for "celiac dis-

ease" and said they can be used in almost any quantity.

This digestive disease, formerly known as chronic intestinal indigestion, is characterized by a lack of muscle tone and marked distention of the abdomen. The little patients are extremely irritable, have no appetite and do not grow properly. Furthermore they cannot tolerate carbohydrates, which include all starches and sugars.

Dr. Haas reported, however, that the carbohydrate in bananas is perfectly tolerated. The banana contains ferments which can break up starches and convert cane sugar into fruit sugar, which is a more easily utilized form, he explained. Bananas also contain all the vitamins except D.

*Science News Letter, June 4, 1932*

## ECOLOGY

### Ohio Bogs Yield Story Of Climates Long Ago

**P**OLLEN GRAINS, buried in the peaty muck of ancient bogs in northern Ohio, have revealed, under the microscope of Prof. Paul B. Sears of the University of Oklahoma, the story of midwestern climate since the end of the Ice Age. A similar study of pollen, made in Iowa by George H. Lane, gives backing to Prof. Sears' findings.

The peat samples were obtained by boring down into the soil of the bogs with a hollow instrument. From the core brought up samples were taken every six inches, and the number and proportions of the various species of pollen grains in them were determined.

Combining the samples from two bogs showed that the first forest was of spruce and fir, indicating cool humid conditions. After this pine replaced the fir, indicating cool but dry conditions.

Next came a shift to hardwood trees, suggesting greater warmth. Beech pollen was most abundant at the beginning of these conditions soon being replaced by hickory, which has been predominant until recently. From this it is inferred that the warmer part of post-glacial climate has been largely too dry to favor the beech in Ohio.

Prof. Sears' study backed by that of Mr. Lane, supports the view that post-glacial climate in North America has been largely dryer than the present. Instead of one warm dry period, however, there appears to have been an earlier cool dry (pine) period and a later warm dry (oak-hickory) period, separated by a perhaps more humid (beech) climate.

*Science News Letter, June 4, 1932*

## ASTRONOMY

### Kopff's Comet Sighted By Argentine Astronomer

**K**OPFF'S COMET, a periodic visitor to the earth's part of the solar system, has returned after a six-and-a-half year absence. It was sighted before sunrise on Wednesday, May 25, by Dr. Bobone of Cordoba Observatory in Argentina. News of its rediscovery was flashed to Science Service through Harvard College Observatory at Cambridge, Mass., American clearing-house for astronomical news.

As seen by Dr. Bobone, it was of the twelfth magnitude, far too faint to be visible to the naked eye, and lacked any tail. It was below the celestial equator, an imaginary line through the sky directly above the earth's equator, and lay a little to the south of the zodiacal constellation Libra, the Scales. In the astronomical equivalent of latitude and longitude, the position was: declination minus 26 degrees, 11 minutes, 12 seconds; right ascension 15 hours, 11 minutes, 18.8 seconds.

Dr. Bobone is a well-known comet finder; it was only a few weeks ago—April 18—that he reported the rediscovery of Houghton's comet.

*Science News Letter, June 4, 1932*

## ENGINEERING

### Generator Load Divided For Better Operation

See Front Cover

**W**ITHOUT the pretty girl, this massive stationary winding of a turbine electric generator might appear to be the size of a spool of thread. But contrast emphasizes the machine's 83,300 kilovolt-ampere capacity.

The black arms are heavily insulated butt-ends of copper bars in which electricity is to be generated. They are sunk in grooves in the inner surface of the stator frame.

Within the core of the stator, where the young lady is seated, the energized rotor will spin at 1800 revolutions per minute. Current it induces in the stator is to be used for all types of industrial, municipal and domestic service.

Double stator windings are an unusual feature of this machine. If half the generator's load should fail, the other half will carry on and thus help maintain stability. The Westinghouse Company, manufacturers, say this is the biggest machine of its kind ever built with internal blowers.

*Science News Letter, June 4, 1932*

BOTANY

# Plants and the Spectrum

## "A Classic of Science"

**Yellow Light Is Most Favorable to Plant Growth  
As Shown by Sachs, Whose Centenary Occurs This Year**

*LECTURES ON THE PHYSIOLOGY OF PLANTS, by Julius von Sachs, translated by H. Marshall Ward. Oxford, Clarendon Press, M DCCC LXXXVII (1887).*

ALL THE RELATIONS between the organs of assimilation and light here mentioned, as well as the independence of growth with regard to the latter, must be carefully observed, if the important fact that the decomposition of carbon dioxide and assimilation in the chlorophyll are a function of light is to be properly understood. It follows from what has been said, that not light of any haphazard intensity will do what is necessary. Unfortunately we lack photometric methods to enable us to distinguish those intensities of light which come into consideration in assimilation with the same precision, and generally intelligible exactness, as is possible with the thermometer with respect to temperature. The most exact photometric methods, and especially the method proposed by Bunsen, for instance, only gives us information as to the intensity of the strongly refractive rays of light, the so-called chemical rays; but these, as I shall show subsequently, only come incidentally into consideration. We must therefore adopt entirely different methods with respect to statements concerning the intensity of light necessary for assimilation, and which will not be here given in detail. Only so much is obvious, that, for the decision of certain questions, use may be made of the law that with double the distance of a surface from a luminous point, the intensity of illumination of the latter sinks to one-quarter; at three times the distance to one-ninth, etc.; and that the intensity of illumination of a leaf-surface at the same time depends upon the sine of the angle of incidence. It would cost us too much time, and would moreover lead to no satisfactory result in the end, to enter more in detail into these matters. It must therefore suffice, that assimilation by means of the decom-

position of carbon dioxide, in most plants, and especially in the case of meadow and cultivated plants, trees, and garden-plants of the most various kinds, only takes place with normal vigour and productiveness when the ordinary strong daylight of summer is at the disposal of the plants. The much feebler light in greenhouses, or even in ordinary dwelling-rooms, suffices, it is true, with most plants to bring about a less productive assimilation in the green leaves; but the sickliness of the plant shows how feeble is the nutrition under such circumstances. It is also to be observed that a pot plant standing close to a window, under the best of circumstances only receives the light radiating from half the sky, and only meets with the direct rays of the sun occasionally. If the plant stands somewhat further removed from the window, it is only necessary to imagine straight lines running from the plant or a leaf to the edges of the window, and thence direct to the sky, to find the extent of that part of the latter the rays of which fall directly on the leaves: it is then perceived that a plant removed but a few metres from the window, only receives a very small proportion of light from the sky, and as a rule meets with no direct sunlight at all. Accordingly, the nutrition of plants in the middle of a room is extremely poor, and sooner or later they inevitably perish. On the other hand, however, it is also to be observed that while there are many plants which only flourish well in places which receive the full light from the sky, and the direct rays of the sun, others exist which prefer the shade of woods, or even the feeble illumination in the interior of deep caverns. Here belong, for example, besides some species of *Pyrola*, many Mosses, and especially Liverworts; those Algae which grow exclusively in the depths of large seas, and are thus feebly illuminated, also show that they find the conditions of their existence in less intense light. Just as for each manifestation of life in plants there is an upper limit of temperature, which cannot be



U. S. Dept. of Agriculture

### GREEN LIGHT, STOP!

*The two plants on the left grew under blue-green light for different lengths of time. The two at the right spent the same amounts of time under yellow-red light.*

passed over without injury, so also there is certainly an upper limit of intensity of the light, at which the chlorophyll-grain can no longer accomplish assimilation. Of course this limit of the intensity of light cannot be exactly given, in the absence of suitable photometric methods; and when Pringsheim makes circumstantial statements concerning the behaviour of cells containing chlorophyll in the focus of a lens, or in the sun's image, as he terms it, these purely pathological processes have about as much physiological value as if, for any reason whatever, a so-called sun's image were allowed to act on the retina of the eye through a burning-glass. Much better are the statements of several observers, who, employing direct light, allowed the evolution of oxygen of one and the same plant to take place under various degrees of shading, and so established that a maximum effect at a light-optimum exists for this function also. In the absence of photometric measurements of general value however, I pass over these statements also.

We have much more information as to the various effects of the individual constituents of sunlight, than with respect to the cardinal points of the in-

## Westinghouse Air Brake

one of the famous American inventions which contributed largely to our high-speed civilization, will be

### THE NEXT CLASSIC INVENTION

tensity of the light concerned in assimilation. As is well known, the light of the sun, like that of most incandescent bodies, is a mixture of very different luminous rays, which are distinguished by their refrangibility, *i. e.*, by the amount of divergence which they undergo on entering another medium, as well as by their chemical effects; and obviously the question must force itself upon the investigator whether, and in what manner these different rays of light, of which daylight is made up, influence assimilation in the chlorophyll. For the preliminary guidance of those not quite familiar with the physical knowledge appertaining here, the following remarks may be made. If the sun's rays are allowed to fall through a narrow slit in the shutter of a room, they proceed through space in the form of a straight band, which can easily be seen as luminous striae in the dusty air: if these luminous striae or bundles of rays are allowed to pass through a triangular glass prism, the edges of which we suppose vertical, two results follow. First, the ray of light is diverted from its straight path—it falls on quite another spot on the hind wall of the chamber than was the case in the absence of the prism; and secondly, instead of the one bright stripe which the solar rays originally formed on the hind wall, there now appears a horizontal coloured band, the so-called solar spectrum, in which the colours of the rainbow, red, orange, yellow, green, blue, and violet, follow one another in such a way that the red portion is least, and the violet most strongly diverted from the rectilinear path of the beam of light. In this spectrum, by proper management, a number of black lines appear, running perpendicularly in the horizontal band of colours; these are the so-called Fraunhofer's lines, which, as Kirchoff and Bunsen have shown, are produced by the absorption of certain rays of light by the incandescent vapours of certain metals, in the solar atmosphere. From these fixed lines in the solar spectrum, the most evident of which are distinguished by the letters *A, B, C—H*, it is possible to determine exactly the place where definite effects occur. The re-

frangibility and colour of the different parts of the spectrum are a consequence, as the science of optics teaches, of the different wave-lengths in the vibrations of the luminous æther, of which the light consists.

If now the solar rays, passing through the slit, are allowed to traverse a glass vessel with parallel walls containing a dark blue solution of ammoniacal oxide of copper, the whole of the red and yellow, and part of the green bands in the spectrum disappear; the blue solution has absorbed, kept back, or destroyed these constituents of the sun-light. If a vessel with a concentrated solution of bi-chromate of potash, which appears to our eyes of a deep orange colour, is placed at the same spot, just those parts of the spectrum are cancelled which previously passed through the blue solution—*i. e.*, we now see in the spectrum the red-orange, yellow, and a part of the green, while the blue and violet have disappeared. We have thus in these two fluids excellent means for cutting out the one or the other half of the solar light; and we can therefore, with the aid of these two solutions, experimentally answer the question, what effect does the red-yellow or the blue-violet half of the spectrum respectively exert in the decomposition of carbon dioxide? After the preliminary and less instructive researches of Daubeny (1836), I made in 1864 a detailed investigation with regard to this question. In a glass cylinder filled with water containing carbon dioxide a water-plant was placed; at the cut surface of the stem of this the oxygen evolved under the influence of light escaped regularly in the form of bubbles. This cylinder was placed in a second, wider cylinder, and the space between both filled with one

or other of the solutions previously mentioned, or with pure water. After careful consideration and preparation, I employed as a measure of the decomposition of carbon dioxide in the plant, the number of bubbles which escaped from the cut surface of the stem in one minute. It was now possible to conduct the investigations in such a manner that the plant could be observed alternately for one minute respectively in white complete light, in red-yellow, or in blue-violet light, one immediately after the other, and the gas-bubbles counted. It turned out that in the blue-violet light only very little carbon dioxide was decomposed, while (having regard to accessory circumstances) the effect in red-yellow light was nearly as strong as in the full light which passed through pure water. This result, as well as the observations previously made by Daubeny, Draper (1844), Cloez and Gratiolet (1851), contradicted the prevailing view of the physicists and chemists, that it is the blue-violet part of the spectrum which almost alone brings about photo-chemical effects. The decomposition of carbon dioxide in the plant evidently depends upon a photo-chemical effect; and yet we here see that that portion of the spectrum which is distinguished by physicists as the one chemically effective, is relatively inactive, while the other half of the spectrum is here the effective one. I directly confirmed this apparent contradiction again, by placing in the upper part of the glass cylinder containing the plant a small apparatus which enabled me, while observing the separation of oxygen, simultaneously to observe the effect of the coloured light on photographic paper. When the light passed through the blue-violet solution, the (Please turn page)

### ENGINEERING

## New Orleans Better Able To Pump From Under Water

**R**AIN that falls in New Orleans must be pumped out.

Because the city is below ocean and river level, New Orleans has always been pumping itself from under rain water. For years her pumping installations have been described in the superlative. And now their capacity has been made even larger.

The increase in size became necessary because during the past five years all

previous precipitation records were exceeded, George C. Earl, civil engineer of this city, explains in the current issue of *Civil Engineering*. The present system will in one day remove 14 inches of water covering the entire city. It cost roughly \$1,400,000 per inch of capacity and when all necessary canals are completed this figure will be increased to at least \$2,000,000 per inch.

Science News Letter, June 4, 1932



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evolution of oxygen in the plant was extremely small, while the photographic paper became deep brown; when, on the other hand, the red-yellow solution was interposed, the plant evolved large quantities of oxygen, while the photographic paper reacted but little and feebly.

It may here simply be remarked that it was an inaccurate generalisation on the part of physics and chemistry to designate the blue-violet portion of the spectrum as the part chemically active, simply

because the corresponding rays of light cause silver salts to decompose and a mixture of chlorine and hydrogen to form hydrochloric acid. The action of the red-yellow light on the decomposition of carbon dioxide which we have established contradicts no fact, but only a false generalisation; since it shows that other chemical processes which take place in the chlorophyll are brought about by other rays of light, namely the red-yellow.

*Science News Letter, June 4, 1932*

## PSYCHIATRY

## Most Patients Recover From Quick-Striking Mental Disease

A NEW TYPE of mental disease in which the outbreak is sudden and dramatic but in which the patient has a good chance for recovery was described by Dr. J. Kasanin, clinical director of the Rhode Island State Hospital for Mental Diseases, at the meeting of the American Psychiatric Association in Philadelphia.

The nine patients in whom Dr. Kasanin studied this disease were young people, in the twenties and thirties. They had all been well adjusted in their social lives and at their jobs. They were of average or superior intelligence, keenly interested in life and its opportunities, and ambitious to get the most they could out of it. Their personalities before the mental breakdown were not very different from the general run of people in the community. Some were sociable and others were seclusive. They considered themselves very sensitive and self-critical, unhappy and preoccupied with their own problems, but this was not apparent to anyone else. Some of them had suffered mental or nervous breakdown during their teens but had recovered.

Suddenly, as a result of some definite emotional or mental conflict with their environment, these apparently well-adjusted persons "blew up" in a dramatic disorder, Dr. Kasanin reported. But unlike many mentally ill persons, they did not remain passive, nor seem to accept the mental breakdown in a hopeless way. Instead they went through it as an extremely severe emotional experience, and after a few weeks or months of treatment, they recovered. Dr. Kasanin ascribed their recovery partly to the treatment, partly to their previous

good adjustment to life, and partly to the fact that they were not ill long enough for their thought processes to disintegrate.

When he first saw these patients, their ailment had been diagnosed as the form of mental disease called dementia praecox. However, he did not think their symptoms exactly fitted the picture of that ailment, nor did they seem to fit any of the other classifications of mental disease. Consequently he believes that they are suffering from a somewhat different form of mental disorder.

The outlook for these patients is distinctly hopeful, in Dr. Kasanin's opinion. He recommended psychiatric treatment and thorough psychoanalysis in order to prevent recurrence.

*Science News Letter, June 4, 1932*



The Science Service radio address next week will be on the subject,

### CONCERNING DRAGONS

Charles W. Gilmore

Paleontologist at the U. S. National Museum here and authority on dinosaurs will speak

FRIDAY, JUNE 10

at 2:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

## ANTHROPOLOGY

# Anthropologists Called On To Observe Baby's Eye Color

**W**HAT color are a baby's eyes?

This simple-sounding question has attracted the attention of Dr. Knight Dunlap and Dr. W. C. Beasley, psychologists at the Johns Hopkins University. In trying to answer it, they have discovered that science knows almost nothing about the color of eyes at birth, and still less about the changing color of the iris as it takes its final form.

The psychologists are sure of one thing, emphatically. There is no truth in the old saying, "all white infants have blue eyes."

Trying to answer that simple question about eye color, the two psychologists have found themselves embarked on a major series of investigations, which will require cooperation of experts in other fields of science. Chemists, physicists, oculists, and embryologists are to be enlisted in solving the problems of eye color.

Dr. Dunlap and Dr. Beasley expect to have a preliminary report ready by the end of summer.

"We now would like very much to issue an appeal to anthropologists," said Dr. Dunlap, explaining the program to Science Service. "There is no systematic, reliable information as to the color of the eyes at birth in the various races of the earth. We are anxious to get the cooperation of field workers in anthropology who are stationed in, or plan expeditions to, various parts of the world, in obtaining data on the iris coloration at birth and on changes during the first year. Of special importance will be data on racial stocks which have been hybridized very little during recent times."

Dr. Dunlap stated that he will be glad to send a list of color terms and other details to any anthropologist, willing to assist in the enterprise.

"The classical generalization that 'all white infants have blue eyes' is still widely quoted," Dr. Dunlap said, "although any obstetrician, midwife, or nurse who has noticed the irises of many newborn infants can recall that some are totally brown, some are blue-green, and some are mixed brown-and-blue or brown-blue-green."

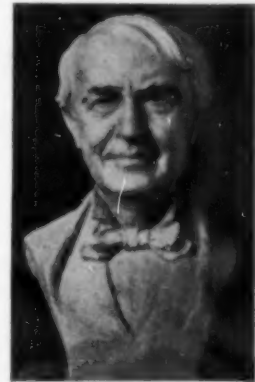
"It is well known also that in early

babyhood, significant changes in iris coloration occur, especially in those which are initially some type of blue. No positive information seems to be available as to whether the initially brown irises desaturate, and whether in the extremes of such cases they become finally some type of blue with or without partial brown patterns of streaks, flecks, or rings.

"Just how rapidly the major changes in coloration occur is unknown. General opinion is to the effect that the 'final' color is attained some time between the first month and the first year of life. However, general observation again reveals that throughout life marked changes occur."

The two psychologists are now observing new babies in the Obstetrics Department of the Johns Hopkins University Medical School.

*Science News Letter, June 4, 1932*



## Announcement!

**THOMAS A. EDISON**

by

**WALTER RUSSELL**

For the first time educational institutions can procure the bust of one of the most famous and best-loved men of science—Thomas A. Edison—whose benign head will prove an incentive to budding scientists. P. P. Caproni and Brother have the honor of the exclusive rights of this work of Walter Russell.

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1—No. 8332 Insect Pins, stiff black, yellow head.

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Specimen mounts as illustrated at the left or of other similar forms may be supplied in sizes up to 12x16" at from 20c. to \$1.00. Write for complete listings.

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## ARCHAEOLOGY

# Sign Dealing with Biblical King Held Genuine Writing

THE NEW inscription found in Palestine dealing with the Biblical King Uzziah is not a forgery, as some critics have claimed, but is a genuine and important piece of writing from Bible days. This is the view strongly expressed by Prof. W. F. Albright, specialist in Palestine archaeology, of the Johns Hopkins University, in a communication to the American Schools of Oriental Research.

The inscription which is arousing scholarly debate is cut into a square tablet of stone, 14 inches to the side. The writing is Aramaic, a common language in ancient Palestine. Experts have with difficulty translated the curious symbols. It is now agreed that they mean:

"Hither were brought the bones of King Uzziah of Judah—do not open!"

King Uzziah was one of the eighth century, B. C., kings of Judah—southern Palestine. He reigned 52 years, and died a leper. The Bible says that he was buried with his fathers at the City of David.

After a time, the site of Uzziah's burial at Jerusalem became a matter of conjecture, and popular tradition said that Uzziah lay in a tomb in the royal cemetery outside of the city walls. About the time of Christ, Prof. Albright says, this traditional tomb of Uzziah was cleared out for some reason. The bones, which may or may not have been

Uzziah's, were transferred to a new location. Here the memorial tablet was erected to mark and protect the remains.

Few Hebrew and Aramaic inscriptions are known today, and most of these are of minor importance, Prof. Albright points out. The new inscription he pronounces of "outstanding significance."

"It is a most interesting illustration of the growing reverence paid to the graves and relics of great men of the past," the archaeologist states.

The Uzziah inscription was brought to light by Dr. E. L. Sukenik, field archaeologist of the Hebrew University in Jerusalem. The square stone tablet has lain unnoticed for years in the Russian archaeological museum on the Mount of Olives. Collections there have somehow escaped close study by scholars. During the World War, the catalog of the museum vanished. Hence, it is now impossible to say where the stone tablet originally stood. This vagueness and mystery regarding the stone's origin has made some scholars suspect forgery.

"The inscription is written in the script of its time," Prof. Albright says, "and is so beautifully carved that one distinguished scholar asserted paradoxically that it is too fine to be genuine. However, there are unique linguistic features which no forger could possibly have hit upon independently."

*Science News Letter, June 4, 1932*

## BOTANY

## NATURE RAMBLINGS

by Frank Thone



Bouncing Bet

AN ACCOUNT of this pretty pink flower should, perhaps, not be included in writing about wildflowers, for although this rurally named plant is wild, it is so in just the same way a buxom, handsome, bouncing country wench in pretty but slightly untidy pink ruffles might be characterized by a soul-dissecting Ladies' Aid Society: "just a little bit wild."

For Bouncing Bet is one of those immigrant flowers from the Old World that "is at home wherever her hat's off"—and she never wears a hat. Planted in old-fashioned gardens as a border ornament, she runs all over the place and finally off the place altogether, spilling over the edges of long-grassed ditches by unpaved village streets and country roads. If you are given to the mildly melancholy exercise of botanizing abandoned village lots and farm homesteads, you will certainly find Bouncing Bet. She outlives all the other untended flowers one commonly finds around such places—hollyhocks, lilacs, flags, yellow roses. Sometimes a patch of Bouncing Bet and a hollow where a cellar once was will be the only traces the inquiring archaeologist will find of a forsaken and demolished house.

Appropriately for one of her color, Bouncing Bet is a member of the pink family. Her generic name is *Saponaria*, which has been translated into another common English name, soapwort. It might be thought that this is due to her light-colored petticoat, which might be imagined as in frequent need of laundering. But the real reason is more prosaic than that. The sap of the plant is somewhat sticky and thick, and in water can be worked up to a lather.

*Science News Letter, June 4, 1932*

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## PSYCHIATRY

**Locates Headquarters of Emotions In Left Brain**

"YOUR HEAD rules your heart," regardless of what the fortune teller reads in your palm. Not only consciousness but also feeling takes place at the base of the left half of the brain in righthanded persons, Dr. Leland B. Alford of St. Louis reported to the American Psychiatric Association meeting in Philadelphia.

Dr. Alford reached this conclusion tentatively after studying patients whose brains had been injured or who had suffered from brain tumors. When the right half of the brain was injured, even if the injury was extensive, the patient appeared conscious and aware of what was going on, and his emotions were normal. Even when the left side of the brain was injured, there was no apparent confusion in the patient's mind, no disturbance of emotions, unless the injury was at the base of the left half of the brain, Dr. Alford found.

Scientists know that the left half of the brain governs the right side of the body, and the left side of the body is governed by the right half of the brain. In righthanded persons, the left half of the brain is dominant, but when the right half is dominant, the individual is apt to be lefthanded.

Dr. Alford studied a series of righthanded patients who were completely paralyzed on one side or the other. It is generally thought that such permanent, complete paralysis of one side of the body results from injury to the base of the brain, rather than to any other part. Of 30 such patients whose paralysis was on the left side, due presumably to injury to the right side of the brain, not one showed confusion of consciousness. On the other hand, of 55 persons suffering from rightsided paralysis, indicating left brain injury, 27 or nearly half were confused. Dr. Alford hopes to be able to prove his theory more conclusively by finding in examination after death actual destruction of or injury to the tissues at the base of the left side of the brain in such patients.

*Science News Letter, June 4, 1932*

So crowded is the nursing profession that the American Nurses' Association says: "This year 25,000 young women for whom there is no work will be graduated from the nurses' training schools."

It is reported that the Soviet Union plans to build the world's largest copper producing plant in eastern Siberia.

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## • First Glances at New Books

### Botany

OLD AND NEW PLANT LORE—A Symposium — *Smithsonian Institution Series*. 390 p. Eight leading American botanists are authors of compact, yet understandable sections dealing with plant biology; plant systematics; plants of the sea, of the grasslands, of the desert; plants and radiant energy; maize; botanical exploration in South America. Like all its sister volumes in the Smithsonian series, the book is excellently illustrated.

*Science News Letter, June 4, 1932*

### Mathematics

THE MECHANICS OF THE CALCULUS — John Martin Barr—*The Integraph Co.* (Cleveland), 358 p., with integrgraph equipment (for educational institutions and students) \$25. The book is largely a text describing the use of the ruled, celluloid equipment. Together they constitute a "slide rule for calculus," to make calculus as ready a working tool for the engineer as numerical computation now is through the medium of the slide rule. The equipment interprets and visualizes calculus as analytical geometry explains algebra. With the spread of knowledge of its use, the practical engineer should have at his command for the solution of everyday problems mathematics which has heretofore been difficult for him to get at and make practical use of.

*Science News Letter, June 4, 1932*

### Forestry

TREES OF WASHINGTON—Erle Kauffman—*Outdoor Press, Washington, D. C.*, 90 p., \$1. George Washington loved trees, and was always planting new ones, so that Mount Vernon is dotted with fine specimens, some quite authentically his, others attributable to him with fair credibility. The great city which is his namesake is Washingtonian in its wealth of trees as in its architectural classicism. This little book brings into one place, in readable popular form, much information about Washington's trees and the Washington trees.

*Science News Letter, June 4, 1932*

### Radio-Education

RADIO AND EDUCATION 1931—Edited by Levering Tyson—*Univ. of Chicago*, 271 p., \$3. With the increasing place that radio is playing in education, both in and out of the schoolroom, more serious consideration is being

given to the problem of making it an effective agent. The National Advisory Council on Radio in Education is one of the principal agencies in this work and this volume gives the proceedings of its 1931 meetings.

*Science News Letter, June 4, 1932*

### Metallurgy

THE BOOK OF METALS—Donald Wilhelm—*Harper*, 341 p., \$4. Concise chapters of this book cover each of the principal common metals, iron, wrought iron, cast iron, steel, alloy steels, aluminum, copper, brass, bronze, nickel, zinc, lead, tin, gold, silver, platinum. The book is written in collaboration with corporations, associations and metallurgists representing the various industries producing the metal.

*Science News Letter, June 4, 1932*

### Nature Study

OUTDOOR VISITS — Edith M. Patch and Harrison E. Howe—*Macmillan*. 212 p., 84c. The second book in the new Macmillan series, *Nature and Science Readers*. These books are skilfully written for very young readers, and well illustrated with pen-and-ink drawings. There are also a few attractive color plates.

*Science News Letter, June 4, 1932*

### General Science

TURTOX SERVICE LEAFLETS—*General Biological Supply House*, free to teachers. Although issued by a commercial biological supply house, these leaflets are not primarily aimed at sales promotion. They give useful practical suggestions on such subjects as making insect collections, building herbaria, etc. To date, 45 of these leaflets have been published.

*Science News Letter, June 4, 1932*

### General Science

REPORT OF THE CENTENARY MEETING—*British Association for the Advancement of Science*, 630 p., 25s. The reports of annual meetings of the British Association for the Advancement of Science are notable summaries of science, and this volume of the Centenary Meeting at London, 1931, is no exception. In addition to the usual presidential addresses and the journal of the meeting, containing abstracts of various papers, there is printed in full the important symposium on the evolution of the universe.

*Science News Letter, June 4, 1932*

### Aeronautics

A GENERAL TEXT ON AERONAUTICS —Hilton F. Lusk—*Ronald Press*, 420 p., \$3.25. Written to provide a text for a general course of aeronautics in technical institutes, junior colleges, technical high schools, and aviation ground schools, there is included the kind of information that the Aeronautics Branch of the Department of Commerce expects airplane pilots to learn at ground schools.

*Science News Letter, June 4, 1932*

### Psychology

HISTORY OF PSYCHOLOGY IN AUTOBIOGRAPHY, Vol. II—Ed. by Carl Murchison—*Clark University Press*, 407 p., \$5. The influence of men on the progress of science is so important that a work like this has rare value. Several nations and many differing fields of interest are represented in this second volume of a series which is to comprise four with additions every three or four years.

*Science News Letter, June 4, 1932*

### Animal Biography

LIVES — Gustav Eckstein — *Harpers*, 216 p., \$2.50. Not much biology in these accounts of individual animal lives (including one Portuguese gardener so much of the soil he would never have resented the inclusion); but a great deal of sympathy and understanding, and a certain amount of honest sentiment. Surely this is a book that the Little Poor Man would have permitted his followers to own, thought he forbade them possession of so much as a breviary!

*Science News Letter, June 4, 1932*

### Aeronautics

BIBLIOGRAPHY OF AERONAUTICS, 1930 —Paul Brockett—*Govt. Print. Off.*, 261 p., 50c (paper cover). A continuation of references to aeronautical literature, arranged in alphabetic and dictionary form and issued by the National Advisory Committee for Aeronautics each year.

*Science News Letter, June 4, 1932*

### General Science

LISTS OF ESSENTIAL APPARATUS FOR USE IN HIGH SCHOOL SCIENCES—T. C. Holy and D. H. Sutton—*Ohio State University*, 32 p., 75c. As the result of this study, it is found that the approximate cost of essential apparatus used in the teaching of biology, chemistry, general science and physics amounts to nearly \$5,000 per high school. Teachers in thirty-five of the forty-eight states were consulted in making up the list.

*Science News Letter, June 4, 1932*